

SIXPENCE

AUGUST 1942

AMATEUR RADIO

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WIRELESS INSTITUTE
OF
AUSTRALIA



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AMATEUR-RADIO

INCORPORATING THE N.S.W. DIVISIONAL BULLETIN

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August, 1942.

AUSTRALIAN EXPERIMENTERS RECOGNISED.

AMATEURS AND THEIR EQUIPMENT GIVEN A PLACE IN CIVILIAN DEFENCE.

Since the ban on Experimental transmissions came into force shortly before the outbreak of war, Federal Headquarters and the various Divisions individually have submitted various schemes at different times to the Postmaster General's Department for the use of the Services of those Licenced Experimenters and their gear in the present emergency. The Department has favorably commented upon one or two of these schemes, but unfortunately the Naval Board--the body controlling communications in wartime, could not see its way clear to grant permission for the breaking of the seals.

Several Divisions were far from discouraged by constant rebuffs, particularly New South Wales. With the entry of Japan into the war, considerable impetus was given to Civilian Defence organisations in this State, namely the State War Effort Co-Ordination Committee and the National Emergency Services. A scheme of Radio Communication embracing the services of Amateurs and their equipment was placed before the former body, but at first received scant consideration. Shortly afterwards a State Wide Emergency Test was held, and ordinary means of communication did not function as well as was expected. With this knowledge, the Institute again placed its suggestion before the State War Effort Co-Ordination Committee and this time it was favorably considered, and it was decided that the Postmaster-General's Department be again approached.

After several months of protracted negotiations, Amateurs throughout Australia will be pleased to learn that the Wireless Institute of Australia and Australian Amateurs generally are the first in the world to be recognised by a National Government and allotted a place in the defence of their Country. On the 8th July 1942 permission was received from the Department of the Navy for the operation of the Emergency Communication Network!

Briefly the operation of the Network will be as follows:-
The Wireless Institute of Australia, New South Wales Division will work in conjunction with the State War Effort Co-Ordination Committee and will provide operators and equipment 25 stations.

These will be located in Sydney and outlying suburbs and frequencies have been allotted in the 28 mc band. In addition the Institute is to supply and train operators for a medium frequency commercial installation. Thus the whole Radio Communication installation of the State War Effort Co-Ordination Committee will be manned entirely by hams. After many years of untiring effort the Wireless Institute of Australia has at last convincingly demonstrated the value of the Experimenter to the community.

Applications from Experimenters interested are now being received by this Division and very soon the Network should be in operation.

-----ooOoo-----

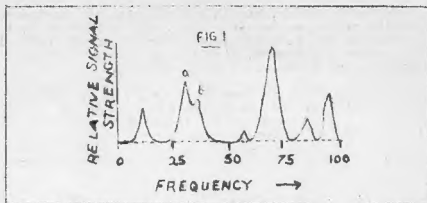
THE PANORAMIC RADIO SPECTROSCOPE

-- Extracts from Q.S.T. March 1942 --

WHAT IT DOES - The Spectroscope is attached to any communications receiver for displaying a band of frequencies on the screen of a cathode-ray tube, where each signal appears as a separate peak, showing its frequency, strength, type of modulation, fading characteristics and frequency stability, as well as the nature of any interference.

Panoramic reception can be easily understood by reference to Fig. 1. Suppose we have an ordinary receiver and tune it through a band of 100 kilocycles, starting from any frequency desired, say 3900 kc. If we should plot the strength of the signals as we pass them against frequency, the curve might resemble that shown, each peak representing a received station. The width of the signal will depend upon its strength and the selectivity of i.f. amplifier, and what we actually do is plot a series of i.f. resonance curves as we pass through the various signals. Peaks a and b are too close in frequency for complete separation; in other words, the signals are so close that the i.f. selectivity is not sufficient to make them appear as isolated peaks.

In the panoramic receiver, a similar curve is traced by the oscilloscope spot each time the receiver is tuned through the band, and by repeating the tuning rapidly (25 times per second or more) the trace appears as a continuous line.



The station to which the receiver is tuned appears in the centre of the screen, while stations above this frequency appear on the right half of the screen and stations of lower frequency on the left half. The band-width represented by the graduated horizontal scale can be varied from 0. to 100 kc or more. The stronger the signal, the higher its "peak", so that relative strengths can be seen at a glance.

If the operator tunes the receiver slowly, stations move in a procession across the screen, so that a visual picture of the whole band is quickly presented. Each station in turn passes over the mid-frequency mark on the horizontal scale as the receiver tunes through it and it is heard.

HOW IT WORKS: Circuit details are not yet available, but a commercial version of the radio spectroscope connects by an input cable clipped on to the plate prong of the receiver mixer or converter tube. Detuning of the receiver i.f. is prevented by an isolating resistor at the clip. The i.f. signals are carried through the cable to the panoramic scope and are then amplified and passed through a second mixer where they are converted to a new (second i.f.) frequency, then through a sharply tuned second i.f. amplifier, a final detector and an audio amplifier, to the vertical plates of the cathode-ray tube. A compensated band-pass amplifier delivers a "flat-topped" band to the second converter so that the actual strength of a signal is represented fairly accurately by its height on the screen.

The second converter is "swept", i.e., the frequency of its oscillator section is varied periodically through a range of frequencies by means of a reactance tube. A saw-tooth generator feeds the reactance tube and also feeds (through an amplifier) the horizontal plates of the cathode-ray tube. Thus at any instant the second mixer with its second i.f. selects a single frequency and delivers it to the cathode-ray screen as a vertical deflection. But the frequency selected is varied periodically from one end of

the band to the other, simultaneously with the horizontal deflection of the cathode-ray tube. The result is that the whole band of 100 k.cs (say) is portrayed on the full width of the calibrated screen, with the signal to which the receiver is tuned appearing in the centre.

The sweep frequency should be at least 25 per second to eliminate flicker, but should not greatly exceed this for a selective receiver as otherwise the signals will not develop full vertical deflections.

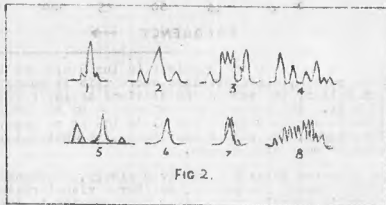


FIG 2.

Fig. 2, showing tracings of some photographs of the Cathode-ray screen.

1. Carrier modulated with 3,000 cycles, sweep-width 70 k.c. Note sidebands.
2. Same as 1, sweep width reduced to 25 kc.
3. 14 mc. amateur phone band.
4. Portion of the broadcast band. Stations every 10 kc.
5. Three automatic telegraph stations. Trace closed at bottom indicates keyed signal. On the left side a key click appears.
6. Frequency modulated carrier during period of silence.
7. Same with very little modulation.
8. Same with heavy modulation.

If the band width be cut to zero the cathode-ray tube acts as a normal oscilloscope showing the modulation envelope of the signal tuned in on the receiver.

POSSIBLE USES. Just a few applications should appeal to hams. One can instantly see the loudest station on the band or the one most free from interference; those DX stations like W08AH who used to wander about 50 kc. during an over can be followed with ease; a transmitter can be steered into a clear spot; key clicks, over-modulation or frequency instability are shown visually; that elusive multiplier can be watched, literally, during a contest; and think of the pleasure of going over after a CQ-DX and seeing the DX popping up all over the band!

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WATCH YOUR CHASSIS! CONNECTIONS FOR SAFETY

Here is a safety kink taken from QST which seems to have received little prior attention in spite of its obvious importance. It concerns power supplies where the power section is made as a separate unit.

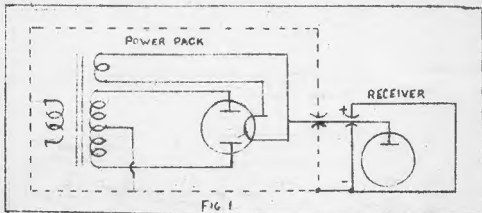


Fig. 1 shows that if the negative of the power supply is grounded to its own chassis and a negative return wire is connected between the two chassis, a highly dangerous situation can exist. If, accidentally or otherwise, the negative return wire is broken or removed, the full high voltage appears between the two chassis. It is very easy to overlook the fact that the chassis may at any moment carry high voltage, whereas if the B- is carried to the receiver by a separate wire as in Fig 2 all high potentials are confined to the leads which if broken or disconnected would be recognised as potential dangers anyway. Of course an unsound connection of this kind is likely to be made only by the inexperienced, to whom this article is mainly addressed. Never under any circumstances should the B- be connected direct to the power supply chassis. The golden rule for the B- should be "First stop--receiver Chassis."

If it is desired to have a B- run to an external ground this must be effected through the receiver frame, back via a ground wire and through the power supply chassis to ground, as in Fig. 2. Connected in this manner, no shock can result from a disconnected load.

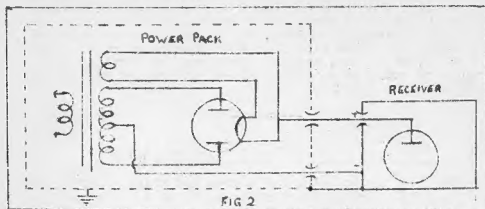
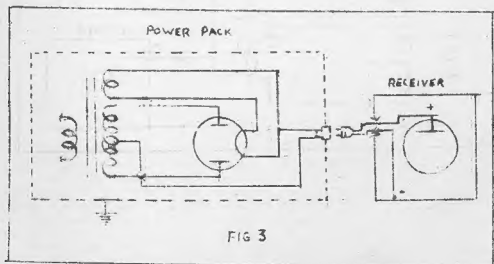


Fig. 3 shows one sound solution of the problem, since pulling out the plug used renders the power supply quite harmless. Ordinary house fittings are quite suitable electrically up to voltages of about 500 and maybe higher.



WHISTLING METEORS

Some interesting work has been carried out by the Research Department of All India Radio on a phenomenon which, as far as it is known, has not previously been reported. A short account of the work is given in the "Wireless World" and it is from this that these notes are taken.

It was noticed that when listening to the un-modulated carrier waves of the Delhi short wave transmitter at a location only 10 miles distant and therefore well within the skip distance for the sky wave, there were frequently audible heterodyne whistles of a peculiar type. These usually appeared as a high note of perhaps 3000 cycles frequency which rapidly descended in pitch, finally disappearing from one-fifth to several seconds after first being heard. They are likened to the 'ping' made by a rifle bullet deflected from a rock.

From this description it is easy to recognise the phenomenon and it is probable that most radio men have heard it at one time or another without realising its special significance.

Ordinary heterodyne whistles are usually of a roughly constant pitch, or at any rate do not vary in frequency in this characteristic manner. It was realised by the A.I.R. engineers that these whistles must be due to interference between the directly received ground wave and a wave being reflected from a rapidly moving surface. Such a wave would suffer an apparent change in frequency, or Doppler effect and it is this which, beating with the directly received ground wave, produces the heterodyne note. The descending pitch of the note is due to the moving reflecting surface being retarded in velocity down to zero.

The only likely phenomenon with a sufficiently high velocity to produce such Doppler effect is that of the meteors or "shooting stars" which enter the atmosphere, and the fact that these were indeed responsible for the whistles was confirmed by observations of the appearance of meteors in the sky; their appearance coinciding with the whistles heard in the receiver.

The meteors apparently expend the greater part of their kinetic energy in ionising the molecules of atmosphere gas the ionisation being caused by the energy of the impact of the molecule with the high speed meteor. Such ionisation can be sufficient to reflect radio waves of the frequency concerned, more particularly from the region of the head of the meteor.

By observing the initial frequency of the whistle it was possible to calculate the velocity of the meteor, and experiments showed that this, was some times in the region of 80 km per second, which agrees well with the figures obtained from visual observations. This and other experiments indicate that the whistle phenomenon will be of value in obtaining information on the conditions obtaining in the upper atmosphere.

-----c00-----

A NEW WORD ?

You might think that "radio-phone" or indeed the use of the prefix "radio" in connection with voice communication at a distance and without connecting wires was something that dated back no great number of years. As a matter of fact the term "radio-phone" was first used so long ago that even the oldest of us must have been infants at the time.

The name was applied round about 1880 to a system of telephony developed by the famous Dr. Graham Bell, the Scotsman whose name will live for ever in the annals of the telephone and the gramophone. In 1878 Bell was still trying to find a completely satisfactory means of impressing the modulation corresponding to sound waves upon an electric current. It was suggested to him that the selenium cell might be used for the purpose, and he developed an apparatus which used it and worked.

Sound waves from the lips of the speaker were made to impinge upon a small and very light mirror, free to move. A ray of light focused on to the mirror was normally reflected on to a selenium cell. When words were spoken into the instrument the mirror was set in motion, and the reflected light varied according to the received sounds. Though it evoked much interest when exhibited in America, Bell's radio-phone never succeeded in doing anything better than effect the surely intelligible reproduction of the simplest speech sounds.

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U.S. Bans Tow Sets.

The U.S. War Production Board has ordered that the manufacture of broadcast receivers and gramophones for civilian use must be discontinued after April 22nd of this year.

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SLOUCH HATS AND FORAGE CAPS

Wally Ryan, 2TI, tells me I have now to somehow or other fill two pages each month. That first means the end of my little surplus that I sometimes keep over. Secondly, will my usual correspondents please double themselves...thank you...and over so many thanks to those who have unfailingly helped me so far.

What do you know...you remember how I "stuck up for" 3RJ, in my column last month? Well, I take it all back...that reporter of mine certainly knew a thing or two, for a week or so ago, Ray...Pilot Officer Jones, I mean, of course, wandered into 2YC's, and with a sardonic gleam in his eye said, "I'm returning to VES on Thursday, Jim." When you think they nearly had the range I said before, wouldn't it....I'll never get that QSL position, so send him back, Vaughan.

Another laddie making frantic efforts to get out of VIS, since "our raid" is P/O Frank Goyen 2UX. After being on a ferry during the sub. attack, he says he "pines" for Alice Springs. But his yf who is at NES Control Centre tells him not to worry as she will give him a special "rid." They both "blitzed me then when I innocently asked if the pay-off cash was to be counted. One can never trust families....I find.

Fl/Sarge Bill Lewis 2YB/6YB was down in VIS spending his seven day's Home Leave. He is up at where, as Bill puts it, "a few of our chaps are "minding" a whole lot of Yanks."

From Mr. Roberts Snr. we have news of 2JV. He was in a Singapore Hospital ten days before the surrender. A shell splinter caused a nasty flesh wound in his arm. As he was in the 8th Division Signals over there, he should have some stories for us later on. Meantime, we can only wish him...best of luck om. Incidentally, Mr. Roberts Snr. has the "real Ham spirit" as he forwarded along his son's subscription for 1942-43.

Gnr. Morehead is taking a signalling course with the 1st Motor Div. Sig. School....he wishes he could get a transfer to this unit since their signallers seem to "get plenty of signalling" Hi!

VE2CI arrived safely back from "across the Timor" and was surprised to find the Institute still going OK...oh, Gordon, with Wally as Federal Secretary, and me with a column....Gordon says that at one time in Darwin he was the proud "possessor" (pro-ton) of six motor cars and two trucks. Hi! He reckons that real dinky-die shrunnel doesn't sound at all like it does at the Talkies. A couple of skinned forams from dodging it in a hurry are proof enough... The revr and Xmitter in the Zeros

are wonderful pieces of work he says, so one more th
Japs aren't as Dumb as we are led to believe. However,
I believe, that J is off his QSO list after the war, on
account of their occurcy in bombing some beautiful word-
carvings he had gone to a lot of trouble getting self
back to Darwin from the East. 2CI said it felt worse than
blowing ones best and last tube.

Morris Myers seems to have become a Flight Loot...
good work, om. Up in where he is they have the
"usual" Ham Gathering. 3ML and then next to Bob for variety
is 3HZU.... Major Rocky, a wellknown call. 3KKE is also
on the Communications Staff, and last to come is VE2ZE who
received his Commission the same time as Johnny Trill 2XQ.
Morris says that Super Pros, 7C100X, HROs and Super Skyriders
are "two penny" up there. Why, ohwhy, was I ever a Stay-
at-home Chemist????

Another chap up North now, is Cec Horne 2LXK who seems
to have fully dodged the NS Education Dept., which was
trying to get him back to work. Glad you beat them to it,
Cec.

Back from up North...very far north...is VABE, who is
looking forward to bombfro months at Canberra, along with
4RF, the 1's and 2EO's Chooks.

4RF, our Correspondent...and what a newsound he
is...there'll be a political upheaval at 2YC if he gets
shifted. He also reports the 3KY's been so industrious up
there stringing antennae at Navy's 1st Station that the whole
place now resembles a gigantic cobweb.

Canberra is also reported "lousy" with Hammarlunds,
HROs, etc., but alas, for 2ACG, 2EO, 4RF and the rest of
the gang, not a single one has been written off yet. Hi!

Con of 2LZ still rusticates out at P Park...I think he
is a Fl/Serge these days. Why don't you get into the Rush
Rush Service, Con? Some of those experiments of yours
should come in useful.

and here is where I will leave it this month, with a
nice little nest egg from 2EO stowed away for next month...
just in case. Now, remember chaps, this is OUR new and
better 1st TIME and our Radio...and this is YOUR column. So
send along all your news to 2YC...78 Melrose St., Mease,
N.S.W. or ring MULO92, and you will never recognise what
you tell me. Hi!

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DIVISIONAL NO. 13

.. Federal Headquarters ..

The main subject of discussion at the July meeting of the Federal Executive was success attained by the New South Wales Division in their efforts to provide an Inter-ency Communications Network for the State Effort Co-ordination Committee. It was decided that each Division be informed of the procedure adopted by New South Wales, so that eventually the Network would be Australian wide.

It was noted that Victoria and New South Wales had agreed to exchange their respective publications was received with interest. It was decided to go ahead with the scheme to take into account the interests of amateurs in those Divisions where the scheme would be comparatively inactive.

CQ DX

4. WREO: - We hear stories of Radio Hams in many foreign times and places, but these days, but unfortunately their tales will have to wait until the war is won and the lid lifted off the subject of the very "hush hush". Here is one interesting idea that we can talk about.

The call "GHL" owned by Doc Stuart was well-known throughout the world in the "good old days", both in Ex Contests - time or on and he was always fond of saying, "GHL is back" these days is to receive and transcribe the daily English voice broadcast from the "Red Cross" and KGOZ, Chinese international broadcasting stations in Chungking.

Programs are recorded on instantaneous acetate discs and are re-recorded. "GHL" is aided in this work by a woman secretary-probably the only one in the world who takes dictation from a source 7000 miles away through static, heterodynes, and other things.

The driving method used by Doc is interesting. It is a direct method, highly effective, and it is the only one in the system.

The International Board of Directors held its first wartime meeting in 1941. The President George Bailey and Vice President Charles Black were elected unopposed. Many matters of interest to the American Ham and the A.R.R.L. were discussed. The both trilling and important. One practical result of interest was both in and outside U.S., was a proposal to move the 20 metre band to the low frequency end was defeated.

ENGLAND. Time marches on. April issue of the T. & R. Bulletin states that due to the severity of paper rationing, the size of that magazine is to be reduced. One very popular section due for the axe is "M.O.T.A." - "The Month Off the Air". This page, originally commenced by Ham Whyte in the days when Dx was Dx and not ten miles from the main transmitter, then known as The Month on the Air, was always interesting reading. With the sudden demise of ham radio in England, it continued to chronicle the doings of countries that were still transmitting on the amateur wavebands. Now with the course of events there is really nothing to chronicle.

Incidentally, at its February Meeting the R.S.G.B. approved of 147 applications for membership.

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NEW SOUTH WALES DIVISION

The July Monthly Meeting of the Division was held at Y.M.C.A. Buildings on Thursday 23rd., having been postponed from the previous week on account of the blackout.

The news that the Division's scheme for a National Emergency Communication Network had been received with the blessings of the powers that be was received with enthusiasm by all present, and the main part of the evening was given over to discussing this matter. The Institute is grateful to Lieutenant Milton for the very valuable advice tendered regarding semi-portable equipment and the availability of materials.

A Technical Committee comprising R. Priddle VK2RM, P. Dickson VK2AFB, V. Bennett VK2V, W.J. McElroy VK2UV and F.G. Ryan VK2TJ has been formed and they are at present working on details for standard circuits for Transmitters and Receivers, Antenna Systems and operating procedure.

Members were pleased to learn that a basis for amalgamation satisfactory to both "A.R." and the Bulletin had been reached and were looking forward to the August issue of the Magazine.

Sagor Jim Haining VK2AKZ on sick leave from an "Advanced Allied Battle Station" gave details of Japanese bombing attacks on an Australian town in the North. It was unfortunate that Roger Torrington VK2TJ was not present. At a later date an endeavor will be made to match these two lads over one hundred yards on the flat in an endeavor to create a world record for that distance with a view to Olympic honors.

It was unfortunate that Popoyo was unable to give his long awaited description of the Jap subs that were sunk in Sydney Harbour. It has been rumored that he has "acquired" one for a souvenir.

The next General Meeting of the Division will be held on Thursday 20th August 1942 at Y.M.C.A. Buildings commencing at 8.00 p.m. and it is anticipated that quite a lot more information will be available regarding the Emergency Network.

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VICTORIAN DIVISION

There was a good attendance at the annual general meeting of the Victorian Division which was held at the Rooms on Tuesday night August 4th.

The president, in his address, touched on the various activities of the Division during the last twelve months. These activities, though limited, consisted mainly on the production of the magazine and the morse classes conducted with the view of providing instruction for those who wished to gain proficiency in code, prior to joining some arm of the services. The classes had proved a huge success and had filled a gap for those who lacked themselves of the experienced instructors, instructors who gave their services willingly without thought of gain.

In the election of President three members were nominated - viz:- Mr. J. G. Marsland, 3NY; H. N. Stevens, 3JO; and I. Morgan, 3DH. The ballot resulted in Mr. Stevens being re-elected by a large majority.

The Council elected were:-

| | | | |
|-------------|-----|---------------|-----|
| I. Morgan, | 3DH | G. Quin | 3WQ |
| T.D. Hogan | 3HX | J.G. Marsland | 3NY |
| R. Marriott | 3SI | H.N. Stevens, | 3JO |
| K. Ridgeway | | B. Burdakin | |

Vice-Presidents were:- Messrs. I. Morgan, 3DH; K Ridgeway and T. D. Hogan, 3HX.

A visitor from VK2 in the person of Roger Torrington VK2TJ was present. He is to be located in VIM for some time.

At the next meeting service conditions permitting, George Bonwell VK3KQ, a member of the Navy will give a lecture, the subject being, "Radio Direction Finding."

It is with deep regret that we announce that Sgnt Pilot Jack Burrage has been posted missing and must be assumed dead. Jack, 3UW was second engineer at 3SK when he joined the R.A.A.F. He was piloting a heavy bomber and when last seen he was heading towards Java in a heavy storm.

3UG..is reported to be somewhere in the north of Australia.

3YK..after his adventures in Malaya etc., adventured into marriage on his return, now Gavin is adventuring somewhere in the north of Australia.

3RJ..was present at the annual meeting. Ray looks fit and well. He did say something about Women, presumably he was referring to the W.A.A.F.

3EF..is now a member of the R.A.A.F. but seems to be having a bad time as he spent a little time in hospital although it wasn't very serious.

3HG..now sports a crown above his three stripes.

3OW..and his YF are to be congratulated on the arrival of a son.

3UM..and his YF are also to be congratulated as they also have a son.

3ZK.. was last heard of in Brisbane, maybe he's a long way further by this time.

3BM..is now in sole charge of the farm. Bruce was married recently.

3UR..a member of the R.A.A.F. 3KV..is also an R.A.A.F. man.

3KQ..is in the Navy as is 3MV

3DH..should have no fear when he needs first aid...Mrs. Morgan headed the list at a recent examination.

POSTED MISSING:-

Lt. A. G. Woynton VK3XU

Captain J. Tutton VK3ZC

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Meeting Night—First Tuesday in each month.

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Treasurer: W. McELREA, VK2UV
Councillors: V. BENNETT, VK2VA; N. GOUGH,
VK2NG; R. SMITH, VK2AIU; R. MILLER.

The Division meets on the Third Thursday of each month at Y.M.C.A. Buildings, Pitt Street, Sydney, and an invitation is accorded to all Amateurs to be present.

H A M S !

**DO YOU WANT TO BE
BACK ON THE AIR?**



**THE WIRELESS INSTITUTE
OF AUSTRALIA**

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Join Now !

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EVERY ACTIVE HAM

in the Commonwealth.

Strengthen our hand by writing to The Secretary of the Institute in your State to-day.

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